

Does Islamic Financing Drive Growth? Dynamic Evidence from Working Capital, Investment, and Consumer Financing in Indonesia

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ABSTRACT

This study examines the dynamic relationship between purpose-based Islamic bank financing and quarter-to-quarter changes in Indonesia's economic growth rate (ΔGrowth). Financing is classified into working capital, investment, and consumer financing. The dataset comprises 64 quarterly observations from 2010Q1 to 2025Q4, with 60 effective observations after first differencing and the inclusion of three autoregressive lags of ΔGrowth . A dynamic median quantile regression controls for changes in the interest rate and inflation, as well as COVID-19 regime and pulse interventions. Statistical inference is based on 600 moving-block bootstrap replications with a four-quarter block length. None of the three financing categories is statistically associated with the conditional median of ΔGrowth when estimated separately. In the combined model, investment financing has a negative coefficient, whereas working capital and consumer financing remain insignificant. However, investment financing is insignificant in the separate model, indicating that the combined-model result is sensitive to model specification and does not support a causal interpretation. Lagged changes in the growth rate and pandemic interventions are the most consistent correlates of short-run growth dynamics. Overall, the evidence does not show a consistent same-quarter association between increases in nominal purpose-based Islamic financing and an acceleration in economic growth. These findings suggest that Islamic banking development should emphasize not only financing expansion but also allocation quality and sectoral linkages.

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Introduction

Islamic banks perform an intermediation function by connecting public funds with economic activities through Sharia-compliant instruments. Unlike interest-based intermediation, Islamic financing uses asset-based, sale-based, lease-based, and profit-sharing transactions that are conceptually linked to real-sector activities. Through these mechanisms, Islamic bank financing can support production, business capacity formation,

and household consumption. Nevertheless, an increase in financing does not necessarily produce the same economic response because its effects may depend on the purpose of financing, recipient characteristics, economic structure, macroeconomic conditions, and the time required for financing to generate economic outcomes.

International empirical evidence generally indicates a positive relationship between Islamic banking development and economic growth. Imam & Kpodar (2016) found that Islamic banking development was positively associated with growth after accounting for various economic determinants. Boukhatem & Ben Moussa (2018) similarly showed that Islamic banking development contributed to GDP per capita growth, although the strength of the relationship depended on institutional quality. In Malaysia, Kassim (2016) and Hachicha & Ben Amar (2015) found that Islamic bank financing was related to economic activity through investment and its connection with the real sector.

Nevertheless, the empirical findings are not entirely consistent. Caporale & Helmi (2018) demonstrated that the relationship between credit and growth may differ between Islamic and conventional banking systems. Mensi et al. (2020) found a nonlinear relationship between Islamic banking development and economic growth. The effectiveness of financial development also depends on institutional quality because increased intermediation without adequate institutional support does not necessarily produce higher growth (Law et al., 2018). Accordingly, an increase in Islamic bank financing does not automatically generate a uniform growth response.

Farah et al. (2025) reinforced this conclusion through a systematic review of 68 Scopus-indexed articles published between 2009 and 2024. Most of the studies supported a positive contribution of Islamic banking to economic growth. However, the magnitude and direction of the relationship varied according to country characteristics, financial development indicators, observation periods, and estimation methods. These differences highlight the importance of using financing measures and empirical approaches that are aligned with the research question.

Indonesia provides a relevant setting because Islamic banks operate alongside conventional banks within a dual banking system. Abduh & Omar (2012) found a bidirectional relationship between Islamic banking development and Indonesia's economic growth. Financing may support growth, while economic expansion may also increase demand for Islamic banking services. El Ayyubi et al. (2017) similarly found a positive relationship between Islamic banking and economic growth. Anwar et al. (2020) subsequently demonstrated that financing, third-party funds, assets, and Islamic bank branch networks were associated with Indonesia's economic growth in both the short and long run.

More recent studies have begun to disaggregate the components of Islamic finance. Trianto & Masrizal (2021) found that Islamic bank financing and sukuk were associated with real-sector output. Masrizal & Trianto (2022) distinguished between profit-and-loss sharing (PLS) and non-PLS financing and found that PLS financing contributed more strongly to economic growth. Sakinah et al. (2022) also identified short-run and long-run relationships between Islamic financial development and the Indonesian economy. These studies suggest that financing characteristics matter and that financing should not be treated as a homogeneous category.

The need for disaggregation is also supported by studies involving the authors of the present manuscript. Riyadi et al. (2021) showed that the optimization of profit-sharing financing was influenced by third-party funds, financing risk, and banks' internal conditions. Junaeni et al. (2023a) found that equity-based financing, debt-based financing, and lease-based financing responded differently to economic growth, interest rates, inflation, third-party funds, and financing risk. A subsequent study showed that financing

composition and diversification should be managed carefully because different financing groups have different growth determinants (Junaeni et al., 2023b). In the broader banking industry, Wulan et al. (2023) demonstrated that working capital loan growth was related to bank characteristics and performance.

More recent empirical studies have further refined the evidence from Indonesia. Rofik et al. (2025), using annual data from 33 Indonesian provinces over the 2010–2021 period and a fixed-effects estimator, decomposed Islamic financing into working capital, investment, and household financing. Their results indicated that total Islamic financing and its individual components were positively associated with regional economic growth, although a larger market share of Islamic financing could constrain growth, reflecting the sector's relatively underdeveloped market structure. Using quarterly data from 2011Q1 to 2024Q3, Athief et al. (2025) subsequently employed an ARDL framework and demonstrated that the short- and long-run relationships between aggregate Islamic bank financing, non-performing financing, and sectoral output varied considerably across economic sectors. Collectively, these findings suggest that the financing-growth relationship in Indonesia is heterogeneous across financing purposes, regions, sectors, and time horizons.

Nevertheless, several gaps remain. First, Rofik et al. (2025) identified differences among purpose-based financing categories, but their annual provincial panel estimates represent average relationships and do not capture short-run national dynamics at the quarterly frequency. Second, Athief et al. (2025) examined quarterly and sectoral dynamics, but Islamic bank financing was treated as an aggregate measure rather than being differentiated into working capital, investment, and consumer financing. Third, both approaches primarily estimate conditional-mean relationships, which may be disproportionately influenced by extreme observations associated with the COVID-19 contraction and subsequent recovery. Consequently, limited evidence is available on how separate and simultaneous changes in purpose-based Islamic financing are associated with the conditional median of short-run changes in Indonesia's economic growth while explicitly accounting for pandemic-related structural shocks.

In addition to the disaggregation issue, most previous studies use methods that estimate relationships at the conditional mean. Such approaches can be sensitive to extreme observations, particularly when the study period includes the economic contraction and recovery associated with the COVID-19 pandemic. Quantile regression provides a more outlier-resistant approach by estimating relationships at specific points of the dependent variable's distribution (Koenker & Bassett, 1978; Koenker & Hallock, 2001). In this study, dynamic median quantile regression is used to estimate the relationship between financing and changes in economic growth under median conditions while accounting for dependence on past changes in growth.

This study addresses these gaps by examining the separate and simultaneous associations of changes in working capital, investment, and consumer financing with changes in Indonesia's quarterly economic growth over the 2010Q1–2025Q4 period. Dynamic median quantile regression is employed to accommodate growth persistence and reduce the influence of extreme observations, while regime and pulse interventions are included to account for the COVID-19 contraction and recovery. The study therefore contributes to the literature not merely by disaggregating Islamic financing by purpose, but by combining this disaggregation with a national quarterly perspective, a growth-change specification, dynamic conditional-median estimation, and an explicit comparison between separate and combined financing models. Accordingly, the estimated coefficients are interpreted as conditional associations rather than causal effects.

Method

This study employs a quantitative explanatory approach using quarterly Indonesian time-series data from 2010Q1 to 2025Q4. The period provides 64 initial observations and 60 effective observations after first differencing and including three lags of changes in economic growth. Data on real GDP growth and inflation were obtained from Statistics Indonesia. Financing data were obtained from the Islamic Banking Statistics published by the Financial Services Authority, while policy interest-rate data were obtained from Bank Indonesia. Financing covers the end-of-quarter outstanding financing positions of Islamic commercial banks and Islamic banking units, classified by purpose of use into working capital, investment, and consumer financing. End-of-quarter positions were used because financing represents an outstanding balance rather than a flow that should be accumulated over a quarter.

The dependent variable is the change in the economic growth rate, defined as:

$$\Delta Growth_t = Growth_t - Growth_{t-1}$$

This transformation was applied because the available growth series was not stationary in levels. Consequently, the model explains changes in growth or growth acceleration and deceleration rather than the level of GDP or the growth rate itself. The main explanatory variables are expressed as changes in the natural logarithm of financing, defined as:

$$\Delta \ln F_{j,t} = \ln F_{j,t} - \ln F_{j,t-1},$$

where (j) denotes working capital financing (WCF), investment financing (IF), or consumer financing (CF).

The log-difference transformation reduces scale differences across financing categories and approximates percentage growth. The control variables comprise changes in the policy interest rate and inflation. The pandemic shock is controlled through four intervention variables: the 2020 pandemic regime, the 2021 recovery regime, a contraction pulse dummy for 2020Q2, and a recovery pulse dummy for 2021Q2. Separating regime and pulse variables prevents extraordinary pandemic-related movements from being incorrectly attributed to changes in financing.

The estimation uses dynamic median quantile regression, or a Quantile Autoregressive Distributed Lag model, at $\tau = 0.50$. Median quantile regression was selected because it estimates the center of the conditional distribution by minimizing absolute deviations and is relatively robust to outliers and residual nonnormality (Koenker & Bassett, 1978; Koenker & Hallock, 2001). A dynamic structure is included because current changes in economic growth may depend on changes during previous quarters (Koenker & Xiao, 2006; Galvao et al., 2013). The model is specified as:

$$Q_{0,5}(\Delta Growth_t | \Omega_{t-1}) = \alpha + \sum_{p=1}^3 \phi_p \Delta Growth_{t-p} + \beta_t \Delta \ln F_{j,t} + \gamma Z_t + \delta D_t,$$

where Z_t denotes changes in the policy interest rate and inflation, and D_t represents the COVID-19 interventions.

Separate models are estimated for each financing category to observe its relationship without controlling for the other two categories. Working capital, investment, and consumer financing are subsequently included simultaneously in a combined model to assess robustness and financing composition.

Combinations of zero to four autoregressive lags and zero to one financing lag are compared using the Quantile Bayesian Information Criterion. All specifications select three

lags of changes in economic growth and contemporaneous financing. Statistical inference is conducted using 600 moving-block bootstrap replications with a four-quarter block length to preserve temporal dependence within an annual cycle (Fitzenberger, 1998). Model adequacy is assessed using pseudo- R^2 , the Ljung-Box test up to the fourth lag, and the variance inflation factor. Financing coefficients are interpreted as the association between financing growth and the median change in economic growth, holding other variables constant. Because the model does not employ an exogenous identification strategy, all findings are interpreted as conditional dynamic associations rather than causal effects.

Results and Discussion

1. Data characteristics and model adequacy

Table 1 presents an overview of all variables before estimation. Descriptive statistics are important for illustrating the scale, variation, and range of the data, but they cannot establish relationships between variables. Empirical relationships can only be evaluated after controlling for growth dynamics, changes in macroeconomic conditions, and the pandemic shock.

The mean economic growth rate over the study period was 4.81%, with a standard deviation of 2.19 percentage points. The minimum of -6.35% and maximum of 7.32% indicate that the study period encompasses markedly different economic conditions. The minimum occurred during the pandemic-induced contraction, while the maximum was associated with recovery from a low growth base. These conditions explain why a method that is relatively robust to extreme observations is important. A model focused exclusively on the conditional mean could be dominated by large pandemic-related movements and obscure the pattern across more typical observations.

Table 1. Descriptive statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Economic growth (%)	64	4.808	2.191	-6.354	7.318
WCF (IDR billion)	64	92,899.48	34,844.91	24,798.00	147,414.22
IF (IDR billion)	64	72,182.10	44,983.37	10,814.00	175,557.93
CF (IDR billion)	64	148,134.51	99,049.11	14,595.00	369,972.97
Policy interest rate (%)	64	5.65	1.223	3.5	7.75
Inflation (%)	64	3.991	1.904	1.03	8.4
Δ Growth	63	0.004	1.673	-6.605	5.312
$\Delta \ln$ WCF	63	0.027	0.044	-0.081	0.14
$\Delta \ln$ IF	63	0.044	0.04	-0.068	0.193
$\Delta \ln$ CF	63	0.051	0.05	-0.049	0.205

Note: WCF = working capital financing; IF = investment financing; CF = consumer financing.

The mean of Δ Growth was only 0.004, although its standard deviation reached 1.673. Thus, over the full period, economic growth did not display a substantial average tendency toward acceleration or deceleration, although quarter-to-quarter changes remained highly volatile. The minimum of -6.605 represents a sharp deterioration in the growth rate, whereas the maximum of 5.312 indicates a substantial recovery. In other words, the dependent variable captures changes in growth momentum rather than the size of economic activity.

Consumer financing had the highest mean at IDR148.13 trillion, followed by working capital financing at IDR92.90 trillion and investment financing at IDR72.18 trillion. Consumer financing also displayed the greatest variation. Its maximum value reached IDR369.97 trillion, approximately 25 times its minimum. This difference indicates that consumer financing expanded considerably during the study period. However, a large portfolio does not necessarily imply a stronger association with changes in economic growth. Its economic relationship still depends on how the funds are used, their domestic production content, debtor characteristics, and the time required for financing to affect economic activity.

The mean log change in consumer financing was 0.051, higher than 0.044 for investment financing and 0.027 for working capital financing. As an approximation, these figures correspond to quarterly growth rates of approximately 5.1%, 4.4%, and 2.7%, respectively. The positive means indicate that all three financing categories generally increased over the study period. Nevertheless, each category also contracted during certain quarters, as indicated by its negative minimum. This variation provides sufficient information to examine whether increases and decreases in financing move together with changes in economic growth.

Descriptive statistics do not reveal causal ordering. Greater financing may support economic activity, but economic growth may also increase demand for financing. Similarly, an economic slowdown may prompt banks or the government to expand financing as a policy response. The empirical results must therefore be interpreted as conditional associations rather than direct causal effects.

Before examining the main coefficients, model adequacy is assessed to ensure that the conclusions are not derived from problematic specifications. The lag-selection and diagnostic results are summarized in Table 2.

Table 2. Model selection and adequacy of the dynamic median quantile models

<i>Model</i>	<i>N</i>	<i>Growth lags</i>	<i>Financing lag</i>	<i>Quantile-BIC</i>	<i>Pseudo-R²</i>	<i>Ljung-Box (p)</i>	<i>Maximum VIF</i>
WCF	60	3	0	-39.392	0.674	0.133	3.789
IF	60	3	0	-40.292	0.679	0.072	3.738
CF	60	3	0	-39.273	0.673	0.138	3.728
Combined	60	3	0	-32.341	0.680	0.081	3.825

Note: Quantile BIC is used to select the lag structure within each model rather than to substantively rank different models.

All models select three lags of changes in economic growth and contemporaneous financing. Selecting three lags means that the current change in economic growth remains associated with changes during the previous three quarters. By contrast, selecting a financing lag of zero indicates that, among the candidate specifications, the most parsimonious model includes the change in financing during the same quarter. This result does not prove that delayed financing effects are absent. It only indicates that adding a one-quarter financing lag did not improve the balance between model fit and parameter count according to the Quantile BIC.

The effective sample decreases to 60 observations because one observation is lost through differencing and three additional observations are required for the growth lags. This reduction is important because the relatively small sample limits the number of variables and lags that can be included. Separate models are therefore treated as the

primary results, whereas the combined model is used to assess whether coefficient directions remain stable when all three financing categories are controlled simultaneously.

Pseudo-R² values range from 0.673 to 0.680. The four models therefore have relatively similar fit for the conditional median of ΔGrowth . The combined model produces the highest value at 0.680, although its improvement over the separate models is very small. Including all three financing categories simultaneously does not substantially improve model fit. Moreover, the pseudo-R² of quantile regression is not equivalent to the OLS R² and should not be interpreted directly as the percentage of variation explained by the model.

The Ljung–Box test yields probability values ranging from 0.072 to 0.138. All values exceed the 0.05 threshold, indicating no evidence of residual autocorrelation at the 5% significance level. The values for the investment and combined models are relatively close to the threshold, and their results should therefore still be interpreted cautiously. Overall, however, the three-lag structure appears sufficient to capture the main temporal dependence in the data.

The highest VIF is 3.825, well below the conventional threshold of 10. In the combined model, the financing VIFs also remain low, at approximately 1.24 for working capital financing, 1.85 for investment financing, and 1.62 for consumer financing. The significance of investment financing in the combined model therefore cannot be directly attributed to severe multicollinearity. Nevertheless, correlation and compositional changes across financing categories may still influence coefficient magnitudes even when VIF values remain acceptable.

Overall, the diagnostic results indicate that dynamic median quantile regression is more suitable than the previously examined ARDL-Growth and intervention ARX specifications, which failed several core diagnostic tests. The quantile model was not selected to obtain significant coefficients. Instead, it was selected because it is more appropriate for data containing extreme observations and leaves no significant evidence of residual autocorrelation at the 5% level.

2. Financing estimates and dynamic factors

Table 3 reports the financing coefficients from the separate and combined models. The separate models show the relationship of each financing category without controlling for the other two. The combined model shows the relationship of each category after changes in the other financing categories have been taken into account. Comparing the two specifications is important because a coefficient that is significant in only one model cannot be considered a consistently robust finding.

Table 3. Financing estimates at the conditional median

<i>Model</i>	<i>Variable</i>	<i>Coefficient</i>	<i>Bootstrap SE</i>	<i>95% confidence interval</i>	<i>Bootstrap (p)</i>	<i>Conclusion</i>
Separate	$\Delta\ln\text{WCF}_t$	-0.204	0.761	[-1.927, 1.215]	0.627	Not significant
Separate	$\Delta\ln\text{IF}_t$	-1.370	0.803	[-2.968, 0.318]	0.107	Not significant
Separate	$\Delta\ln\text{CF}_t$	0.148	0.785	[-1.729, 1.651]	0.723	Not significant
Combined	$\Delta\ln\text{WCF}_t$	0.270	0.798	[-1.387, 1.795]	0.697	Not significant
Combined	$\Delta\ln\text{IF}_t$	-2.940	1.064	[-5.001, -0.718]	0.020	Significant and negative
Combined	$\Delta\ln\text{CF}_t$	1.051	0.896	[-1.001, 2.665]	0.227	Not significant

Note: The dependent variable is Δgrowth_t . The models control for three lags of changes in economic growth, changes in the policy interest rate, changes in inflation, and COVID-19 interventions.

In the separate model, working capital financing has a coefficient of -0.204 and a p-value of 0.627 . Numerically, a 1% increase in working capital financing is associated with a decline of approximately 0.002 percentage points in the median change in economic growth. However, the relationship is statistically insignificant, and the confidence interval is wide and crosses zero. When investment and consumer financing are included, the coefficient becomes positive at 0.270 , although its p-value remains high at 0.697 . The change in sign from negative to positive indicates that the direction of the working capital financing relationship is not stable across specifications.

This result does not imply that working capital financing is unimportant to businesses or the real sector. It is generally used to purchase inventories, pay operating costs, and finance production cycles. Its benefits may first appear in firm-level sales, production, or business survival, while its association with aggregate economic growth may be too small to detect within the same quarter. Working capital financing may also be used defensively when businesses face cash-flow pressures. In such circumstances, financing helps maintain operations but does not necessarily produce an acceleration in economic growth.

The working capital financing result does not directly contradict Wulan et al. (2023). Their study showed that working capital loan growth was influenced by banking conditions and performance. Their analytical direction runs from bank conditions to loan growth, whereas the present study examines whether changes in working capital financing move together with changes in economic growth. Differences in causal direction and level of aggregation mean that the two findings should be regarded as complementary.

Investment financing has a coefficient of -1.370 and a p-value of 0.107 in the separate model. Its confidence interval, ranging from -2.968 to 0.318 , still includes zero. Although the coefficient is larger than that of working capital financing and approaches the 10% significance level, the evidence is insufficient to conclude that investment financing has a consistently negative relationship with changes in economic growth. In the combined model, the coefficient increases in magnitude to -2.940 and becomes significant at the 5% level. Numerically, a 1% increase in investment financing is associated with a decline of approximately 0.029 percentage points in the median change in economic growth, holding working capital and consumer financing, growth dynamics, interest rates, inflation, and pandemic interventions constant.

Despite its statistical significance in the combined model, the investment financing coefficient should not be interpreted as evidence that investment financing causes an economic slowdown. First, the significant relationship does not persist in the separate model. Second, investment financing is used for asset formation, facility development, and productive capacity expansion, which generally require time before generating additional output. A contemporaneous model may capture the initial cost or implementation phase of an investment without capturing its subsequent production benefits. Third, reverse association is also possible: banks, businesses, or the government may increase investment financing when growth weakens as part of a recovery strategy. Without an exogenous instrument, the direction of the relationship cannot be established.

The change in the investment financing coefficient from -1.370 to -2.940 after controlling for working capital and consumer financing also suggests that the result depends on financing composition. The coefficient reflects the relationship of an increase in investment financing relative to other financing categories rather than an absolute assessment of the desirability of investment financing. Given the low VIF values, the issue is not severe multicollinearity but the possibility that the financing categories move together while representing different economic channels. The investment financing result should therefore be described as a negative conditional finding that is sensitive to model

specification.

This result differs from Masrizal and Trianto (2022), who found that PLS financing contributed positively to growth in both the short and long run. However, investment financing is not equivalent to PLS financing. Investment financing is classified according to purpose of use, whereas PLS financing is classified according to contract. Investment financing may use profit-sharing, sale-based, or lease-based contracts. Moreover, Masrizal and Trianto examined the relationship with real-sector activity over short- and long-run horizons, whereas the present study explains the contemporaneous change in economic growth.

Consumer financing has a positive coefficient of 0.148 in the separate model and 1.051 in the combined model. Numerically, a 1% increase in consumer financing in the combined model is associated with an increase of approximately 0.011 percentage points in the median change in economic growth. However, the p-value of 0.227 and a confidence interval crossing zero indicate that the relationship is not statistically strong. Although the coefficient direction is consistent with the expectation that consumption may increase aggregate demand, the data do not provide evidence of a consistent association.

The insignificant result for consumer financing is notable because this category has the largest mean value and average growth. A large portfolio does not automatically mean that its short-run changes are a major driver of economic growth. Consumer financing may be used for housing, vehicles, durable goods, or other household needs. Its effects depend on the domestic production content of financed goods, import intensity, financing structure, and household behavior. Some financing may also substitute for other payment sources without directly increasing aggregate consumption. The aggregate data used in this study cannot distinguish these channels.

When the three separate models are considered together, none of the financing categories is significant at the 5% level. The most defensible conclusion is not that Islamic bank financing has no economic value, but that changes in nominal working capital, investment, and consumer financing do not show a consistent contemporaneous association with the median acceleration of economic growth. This distinction is important: an absence of statistical evidence in a particular model is not evidence that no relationship exists under any conditions.

In addition to financing, the model incorporates growth dynamics, changes in interest rates, changes in inflation, and pandemic interventions. Table 4 reports the coefficients of these variables in the combined model.

Table 4. Growth dynamics and pandemic interventions in the combined model

<i>Variable</i>	<i>Coefficient</i>	<i>Bootstrap SE</i>	<i>95% confidence interval</i>	<i>Bootstrap (p)</i>
$\Delta\text{Growth}_{t-1}$	-0.811	0.037	[-0.889, -0.739]	<0.001
$\Delta\text{Growth}_{t-2}$	-0.752	0.061	[-0.875, -0.610]	<0.001
$\Delta\text{Growth}_{t-3}$	-0.365	0.037	[-0.433, -0.278]	<0.001
ΔRate_t	0.069	0.082	[-0.099, 0.217]	0.353
$\Delta\text{Inflation}_t$	0.017	0.029	[-0.051, 0.076]	0.467
2020 pandemic regime	-4.851	0.366	[-5.451, -3.993]	<0.001
2021 recovery regime	5.013	0.38	[4.236, 5.823]	<0.001
2020Q2 contraction pulse	-5.620	0.49	[-6.784, -4.641]	<0.001
2021Q2 recovery pulse	5.142	0.516	[3.969, 6.156]	<0.001

All three lags of Δ Growth have negative and statistically significant coefficients. The largest coefficient is found at the first lag, at -0.811 , followed by -0.752 at the second lag and -0.365 at the third lag. This pattern indicates an adjustment mechanism in changes in economic growth. When economic growth increases substantially in one quarter, the acceleration tends to moderate over subsequent quarters. Conversely, a sharp decline tends to be followed by recovery. The adjustment effect is strongest over the first two quarters and diminishes by the third quarter.

These negative coefficients do not mean that economic growth necessarily declines after increasing. The dependent variable is the change in the growth rate. Therefore, a negative coefficient is better understood as reduced acceleration or normalization following a large change. For example, exceptionally high recovery growth after a contraction is unlikely to continue at the same magnitude because the comparison base and economic conditions gradually normalize.

The change in the policy interest rate has a positive coefficient of 0.069 and a p-value of 0.353 , while the change in inflation has a coefficient of 0.017 and a p-value of 0.467 . Neither is statistically significant. These findings do not imply that interest rates and inflation are irrelevant to the economy. Monetary policy effects may require time, operate through conventional banks and financial markets, or influence investment decisions gradually. The contemporaneous specification only indicates that changes in these variables are not directly associated with the median change in economic growth within the same quarter after controlling for other factors.

The pandemic intervention variables have the largest coefficients. The 2020 pandemic regime has a coefficient of -4.851 , while the 2020Q2 contraction pulse has a coefficient of -5.620 . Both are significant at below the 1% level. These results capture the deterioration in growth momentum during the pandemic and the exceptional contraction in 2020Q2. Conversely, the 2021 recovery regime has a coefficient of 5.013 , and the 2021Q2 recovery pulse has a coefficient of 5.142 . Both represent recovery from a low growth base.

The regime and pulse coefficients should not be mechanically added to calculate the total impact of the pandemic. The regime variables capture general changes throughout the year, whereas the pulse variables capture exceptional deviations during a particular quarter. Their large values indicate that the pandemic constituted a structural disruption that needed to be controlled. Without these interventions, the contraction and recovery could have been incorrectly attributed to financing, interest rates, or inflation.

The dominance of the dynamic and pandemic variables helps explain the relatively weak financing coefficients. During most of the sample period, changes in economic growth remained within a relatively narrow range. By contrast, the 2020–2021 period experienced exceptionally large changes driven by activity restrictions, mobility changes, public-health policies, government stimulus, and base effects. Under these conditions, changes in Islamic bank financing represented only one of many factors and did not emerge as the principal explanation for aggregate growth changes.

3. Comparison with previous studies and implications

The findings differ from several studies that report a positive relationship between Islamic banking and economic growth. Abduh and Omar (2012) found bidirectional short- and long-run relationships, while Anwar et al. (2020) demonstrated the contribution of financing, deposits, assets, and branch networks to growth. Trianto and Masrizal (2021), Masrizal and Trianto (2022), and Sakinah et al. (2022) also found relationships between Islamic finance and real-sector activity. However, the differences can be explained by at

least four factors.

First, previous studies generally use the level of GDP, industrial production, or other real-sector indicators, whereas this study uses changes in the economic growth rate. Financing may have a positive relationship with the level of output or long-run equilibrium even when changes in financing do not immediately accelerate growth. Second, several studies use total financing or broader measures of financial development. Aggregate measures capture the overall development of the Islamic financial industry, while the separation of working capital, investment, and consumer financing examines more specific channels.

Third, classification by purpose of use differs from classification by contract. A positive effect of PLS financing cannot be directly equated with the effect of investment financing because investment financing does not always use profit-sharing contracts. Similarly, murabahah may be used for consumer, working capital, or investment purposes. Fourth, this study uses contemporaneous financing. Long-run effects identified in previous studies need not appear in the economic growth rate during the same quarter.

The findings support the argument of Mensi et al. (2020) that the relationship between Islamic banking development and growth is not always linear or uniform. In the present study, the relationship also changes across specifications. Investment financing is insignificant in the separate model but becomes significantly negative after working capital and consumer financing are controlled. Working capital financing even changes direction from negative to positive. Such instability indicates that conclusions regarding the economic effects of financing depend heavily on variable definitions, financing composition, time horizons, and empirical specifications.

The findings also complement Junaeni et al. (2023a, 2023b), who showed that macroeconomic variables and banking conditions affect the growth of different financing categories. The present study examines the reverse direction and finds that changes in financing do not have a consistent contemporaneous association with changes in economic growth. Taken together, the results suggest a potentially bidirectional relationship. Economic conditions influence the demand and supply of financing, while financing may affect the economy through processes that require time to materialize.

The first policy implication is that nominal financing growth is insufficient as an indicator of Islamic banking's contribution to the real sector. Assessment should incorporate additional production, firm revenue, productive investment, employment, and value added generated by financing recipients. Rapidly growing financing concentrated in activities with weak domestic linkages may have a limited aggregate effect. Conversely, slower-growing financing may have a meaningful impact when directed toward sectors with strong multiplier effects.

The second implication concerns the time required for financing to generate outcomes. Investment financing should not be evaluated solely through changes in economic growth during the quarter in which it is disbursed. Machinery purchases, facility development, and production expansion require time before generating output. Banks and regulators should use sequential indicators, beginning with investment realization and project completion and extending to capacity utilization and additional production. The negative coefficient in the combined model is not a reason to restrict investment financing; it is a reason to improve how its outcomes are measured.

The third implication is the need for a balanced financing composition. The insignificance of working capital and consumer financing and the sensitivity of investment financing indicate that the contribution of financing cannot be assessed separately from the overall portfolio structure. Working capital financing sustains production, investment financing creates capacity, and consumer financing supports demand. These categories

perform different but potentially complementary functions. Policies that pursue the growth of only one category may overlook the interactions among these financing channels.

The fourth implication is the importance of accounting for structural changes. The pandemic coefficients are substantially larger than those of financing, interest rates, and inflation. This indicates that nonfinancial shocks may dominate the normal relationship between intermediation and economic growth. Evaluating financing performance during a crisis requires distinguishing between expansionary financing and financing intended to maintain business continuity. During a crisis, successful financing may be more appropriately assessed by its ability to prevent business failure and job losses rather than by short-run economic growth.

Overall, the results do not reject the economic role of Islamic banking. Instead, they narrow the claim: changes in nominal working capital, investment, and consumer financing do not demonstrate a consistent contemporaneous relationship with the median acceleration of economic growth. The economic role of financing may operate through more specific channels, require longer time horizons, and depend on macroeconomic conditions and recipient-sector characteristics. This more measured conclusion is important to avoid assuming that every increase in financing automatically generates higher economic growth.

Conclusion

This study finds that changes in working capital, investment, and consumer financing provided by Islamic banks do not have a consistent relationship with the median change in Indonesia's economic growth rate within the same quarter. None of the financing categories is significant when estimated separately, while working capital and consumer financing remain insignificant in the combined model. Investment financing has a significant negative coefficient only in the combined model. Because this relationship does not persist in the separate specification, it should be treated as sensitive to financing composition and model specification rather than as evidence that investment financing inhibits economic growth.

Lagged growth dynamics and the pandemic are the most consistent factors. The three lags of changes in economic growth indicate an adjustment process following large movements, while the 2020–2021 interventions capture the exceptional contraction and recovery associated with COVID-19. The findings suggest that changes in economic growth during the study period were more strongly associated with internal growth dynamics and structural shocks than with contemporaneous changes in Islamic bank financing. Islamic banking's contribution should therefore be evaluated through financing quality, recipient characteristics, productive capacity, sectoral linkages, employment creation, and the sustainability of financing outcomes rather than nominal financing growth alone.

The study is limited by its 60 effective observations, the use of nominal financing, its focus on the conditional median, and its contemporaneous financing specification. The aggregate data for Islamic commercial banks and Islamic banking units do not distinguish among economic sectors, contracts, debtor groups, regions, or financing quality. Moreover, the model does not fully address the possibility of bidirectional relationships between financing and economic conditions. The findings should therefore be interpreted as conditional dynamic associations rather than causal effects.

Future studies should employ real financing measures, longer data series, lower and upper quantiles, and more diverse financing lags, particularly for investment financing. The analysis could also be extended using sectoral or provincial data and by combining classifications based on financing purpose and contract type. Instrumental variable quantile regression, local projections, or identification based on policy changes could strengthen causal interpretation. These extensions would help determine not only whether financing is related to growth, but also which financing categories, sectors, economic conditions, and

time horizons generate the strongest relationships.

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